

CLAIMS:

1. Method for magnetic resonance imaging of at least a portion of a body placed in a stationary and substantially homogeneous main magnetic field, the method comprising the following steps:

5 a) subjecting said portion to a T_2 -preparation sequence;
b) further subjecting said portion to a 2D navigator sequence;
c) measuring a MR navigator signal;
d) generating a series of MR imaging signals by subjecting said portion to an imaging sequence (TFE);

10 e) measuring said MR imaging signals for reconstructing an MR image from said signals;

characterized in that

prior to subjecting said portion to said 2D navigator sequence in step b), said portion is further subjected to a 2D navigator restore sequence.

15 2. Method of claim 1, characterized in that said T_2 -preparation sequence comprises at least two RF pulses (α_X), which are separated by a relaxation period, for enhancing the contrast between tissues with different transverse relaxation times.

20 3. Method of claim 1, characterized in that said 2D navigator sequence comprises at least one shaped RF pulse and at least one gradient pulse being switched during irradiation of said shaped RF pulse in order to excite nuclear magnetization within a spatially restricted navigator volume.

25 4. Method according to claims 2 and 3, characterized in that said 2D navigator restore sequence is applied during said relaxation period in order to selectively transform transverse magnetization within said navigator volume into longitudinal magnetization.

5. Method of claim 2, characterized in that said T_2 -preparation sequence further comprises an even number of substantially 180° RF pulses.

6. Method of claim 1, characterized in that said MR navigator signal is employed for gating of said imaging sequence and/or for adjusting the parameters of said imaging sequence and/or for correction of said MR image.

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7. Method of claim 1, characterized in that said imaging sequence is a turbo field echo sequence.

8. Device for magnetic resonance imaging of a body placed in a stationary and substantially homogeneous main magnetic field, the device comprising means for establishing said main magnetic field, means for generating magnetic field gradients superimposed upon said main magnetic field, means for radiating RF pulses towards said body, control means for controlling the generation of said magnetic field gradients and said RF pulses, means for receiving and sampling magnetic resonance signals generated by sequences of RF pulses and switched magnetic field gradients, and reconstruction means for forming an image from said signal samples, characterized in that said control means comprises a programming with a description of an imaging procedure according to the method of claim 1.

9. Device of claim 8, characterized in that it comprises ECG-means for registering ECG-data from said body, said ECG-data being processed by said control means for gating said imaging procedure.

10. A computer program comprising instructions to:

- 25 a) subject a portion of an object to be examined to a T₂-preparation sequence;
- b) further subject said portion to a 2D navigator sequence;
- c) measure a MR navigator signal;
- d) generate a series of MR imaging signals by subjecting said portion to an imaging sequence;
- 30 e) measure said MR imaging signals for reconstructing an MR image from said signals;
- characterized in that the computer program further has instructions to prior to subjecting said

portion to said 2D navigator sequence in step b), subject said portion is further to a 2D navigator restore sequence.